

-----claim tree-----

1----2
+-----4
+-----3

-----112-----

-----best-----

5415796
5851981
4414128
5523024
4715990
5585342
5108660
4105574
5290472
5342549
5096610
4174304
6057283
5252245
4749509
5362422
4421680
5609678
4203872
6432897
4213873
4673523
5549840
4681704
4284434
5939376
4992213
4784786
5468423
4115548
6429182
5817615
4690779
4315828
6177395
4069066
5030374
4540505
4863629
5472516
5298195
5232632
6228832
5108643
4511488
5494611
5082584
5308400
3882038
6535753

-----classlist-----

510/506
510/424
134/40
510/182
510/433
510/365
510/500
510/435
510/503

510/509
510/499
510/427
510/505
134/38
510/421
510/101
510/422
8/137
510/417
510/501
510/488
510/434
510/437
510/211
510/197
510/430
510/400
510/491
510/304
510/307
427/3934
510/431
510/463
510/238
510/418
510/300
510/108
510/212
510/405
510/374
510/371
510/201
510/310
134/2
510/393
510/325
510/213
134/42
106/311
510/432
510/475
510/490
510/425
510/436
252/364
510/198
510/511
510/321
510/305
510/306
510/407

-----keywords-----

hub cap vehicle car automobile doors tire fender windshield amylase lipase chitinase cellulase protease b
utoxyethanol triethanolamine monoethanolamine ammonium borate ammonium carbamate alcohol ethoxylate neodo
l igepal pluronic tergitol poly-tergent ethylene glycol monobutyl ether monobutyl monobutyl ether glycol
ether ammonia ammonium hydroxide isopropanolamine isopropanol amine hydroxypropylamine tensiometer penetr
ation methanol ammonia ethylene glycol thfa butyl cellosolve triton enzyme propylene glycol propylene eth
ylene glycol alcohol ethylene tetrahydrofurfuryl alcohol furfuryl alcohol butanol isopropanol ethanol met
hanol alkanolamine ammonium phosphate phosphate ammonium acetate ammonium hydroxide hydroxide ammonium bi
carbonate bicarbonate ammonium carbonate carbonate carbamate zwitterionic anionic nonionic ammonia surfac
tant surfaces cleaning claimed automotive propanol glycol alcohol ethylene ammonium acetate borate furfur
yl tetrahydrofurfuryl

-----references-----

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classes:1 510/304 1 510/305 1 510/306 1 510/307 1 510/310 1 510/371 1 510/374 1 510/500
score: 600

keywords: protease;triethanolamine;neodol;enzyme;propylene;isopropanol;ethanol;alkanolamine;anionic;nonio
Page 2

nic;surfactant;cleaning;claimed;glycol;alcohol;ethylene;ammonium;

- mer helped to stably suspend the **enzyme**s, particularly, proteases, in the liquid phase. An exemplary **alkanolamine** is **triethanolamine**. Although the **alkanolamine**s are alkaline buffers and could be expected to affect the performance of the peracid, applicants discovered that its actual benefit was as a phase stabilizer for the **enzyme**s. However, in using **triethanolamine**, it was further discovered that a relatively neat preparation should be used. In preparing detergent formulations containing diethanolamines, it was discovered that even trace amounts of diethanolamines react with the detergent matrix to form an off-color. Thus, **triethanolamine** ("TEA") is preferred for use as the **enzyme** stabilizer. However, it also appears that TEA may impair detergency, oxidant and **enzyme** chemical stability unless used judiciously.

Exemplary water soluble or dispersible polymers could include polyvinyl alcohol, polyvinyl pyrrolidone, hydroxymethyl

- s Nos. 1,298,577, 2,076,011, 2,026,054, 2,026,566, 1,393,042; and U.S. Pat. Nos. 3,951,960, 4,298,290, 3,993,659, 3,980,713 and 3,627,758, incorporated herein by reference. Anti-redeposition agents, such as carboxymethylcellulose, are potentially desirable. Next, foam boosters, such as appropriate **anionic** **surfactant**s, may be appropriate for inclusion herein. Also, in the case of excess foaming resulting from the use of certain **nonionic surfactant**s, anti-foaming agents, such as alkylated polysiloxanes, e.g., dimethylpolysiloxane would be desirable. Also, certain solvents, such as glycol, e.g.s., **propylene glycol**, and **ethylene glycol**, certain alcohols, such as **ethanol** or propanol, and hydrocarbons, such as paraffin oils, e.g., Isopar K from Exxon U.S.A., may be useful to thin these liquid compositions. However, it is again cautioned that the use of solvents is preferably limited. Buffers may also be suitable for use, such as

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classes:1 510/433 1 510/182 1 510/435 1 510/501 1 510/503
score: 555

keywords: triethanolamine;monoethanolamine;ammonium carbamate;monobutyl;glycol ether;ammonia;ammonium hydroxide;ammonia;ethylene glycol;butyl cellosolve;propylene glycol;propylene;ethylene glycol;alkanolamine;ammonium hydroxide;hydroxide;bicarbonate;ammonium carbonate;carbonate;carbamate;witterionic;anionic;nonionic;ammonia;surfactant;surfaces;cleaning;glycol;alcohol;ethylene;ammonium;acetate;

- yl, or R.sup.5 NHCOR.sup.6, and R.sup.5 is C.sub.1-6 alkyl and R.sup.6 is C.sub.6-20 alkyl. A particularly preferred alkyl pyrrolidone is lauryl pyrrolidone, sold by ISF Chemicals under the brand name Surfadone. Relatively low amounts of the alkyl pyrrolidone are used, preferably, about 0.001-2%, when the level of fragrance is from about 0.01-5%.

4. Buffer System

The buffer system comprises a nitrogenous buffer which is added to the aqueous hard surface cleaners of the invention so as to result in a pH of greater than 6.5, more preferably, between 7 and 14, most preferably between 7 and 13. The buffer can be selected from the group consisting of: ammonium or alkaline earth **carbamate**s, guanidine derivatives, ammonium **carbonate**s, ammonium **bicarbonate**s, diammonium **carbonate**s, **alkanolamine**s, **ammonium hydroxide**s, **ammonia** (which forms **ammonium hydroxide** in situ when added to water) alkoxyalkylamines and alkyleneamines and mixtures

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classes:1 510/405 1 134/40 1 510/424 1 510/425 1 510/430 1 510/431 1 510/432 1 510/434 1 510/436 1 510/437
score: 554

keywords: monoethanolamine;neodol;pluronic;tergitol;monobutyl;ethylene glycol;propylene;ethylene glycol;ethanol;carbonate;witterionic;anionic;nonionic;surfactant;surfaces;cleaning;claimed;glycol;alcohol;ethylene;ammonium;acetate;

- e present invention in amounts up to about 10% by weight. It is a feature of the present invention, however, that stable, homogenous formulations can be prepared without the need for hydrotropic

materials of this kind, or with only very minor levels (i.e. less than about 4% by weight).

Other suitable ingredients of the present compositions include pH buffering materials such as alkali metal and **ammonium **carbonate**, **bicarbonate**, metasilicates and ortho **phosphate**. These can be added, if appropriate, at levels up to about 10% by weight to provide a compositional pH equal to or greater than about pH 8, preferably greater than about pH9 and more preferably greater than about pH10. Dyes, perfumes **enzyme**, chlorine-releasing agents, polypeptides and protein hydrolysates, soil suspending agents such as carboxy methylcellulose, hydroxymethyl cellulose and polyethylene glycols having a molecular weight of about 400 to about 10,00

- A C.sub.9-11 oxo-alcohol with 8 moles of ethylene oxide, marketed by Shell.
- Dobanol 45-7
 - A C.sub.14-15 oxo-alcohol with 7 moles of ethylene oxide, marketed by Shell.
- **pluronic** L-42
 - A condensation product of ethylene oxide and **propylene** oxide, marketed by BASF-Wyandotte.
- Deriphat 170C
 - N--C.sub.12-14 alkyl-.beta.-amino propionic acid marketed by General Mills.
- Amphoram CP1
 - N--cocoyl-.beta.-amino propionic acid marketed by Pierrefitte-Auby.
- Deriphat 154
 - Disodium-N--tallow-.beta.-amino propionate marketed by General Mills.
- Ethylan HB-4
 - Phenol ethoxylated with 4 moles of ethylene oxide, marketed by Diamond Shamrock.
- HT Soap
 - Sodium soap prepared from hydrogenated tallow.
- CN Soap
 - **monoethanolamine** soa

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 classes:1 510/433 1 134/42 1 510/182 1 510/427 1 510/435 1 510/501 1 510/503
 score: 552

keywords: triethanolamine;monoethanolamine;ammonium carbamate;monobutyl;glycol ether;ammonia;ammonium hydroxide;ammonia;ethylene glycol;butyl cellosolve;propylene glycol;propylene;ethylene glycol;alkanolamine;ammonium hydroxide;hydroxide;bicarbonate;ammonium carbonate;carbonate;carbamate;zwitterionic;anionic;nonionic;ammonia;surfactant;surfaces;cleaning;glycol;alcohol;ethylene;ammonium;acetate;

- ed from the group consisting of:
 ammonium or alkaline earth **carbamate**, guanidine derivatives, ammonium **carbonate**, ammonium **bicarbonate**, diammonium **carbonate**, **alkanolamine**, **ammonium **hydroxide**, **ammonia** (which forms **ammonium **hydroxide** in situ when added to water) alkoxylalkylamines and alkyleneamines and mixtures thereof. Optionally and preferably, the co-buffer is selected from ammonium and alkaline earth metal **hydroxide**.
- The nitrogenous buffer is a significant aspect of the invention. Because of its presence, greatly enhanced reduction in streaking and filming of hard **surfaces** is achieved after the inventive cleaner is used to clean the same. The preferred nitrogenous buffers are ammonium **carbamate**, **monoethanolamine**, ammonium **bicarbonate**, **ammonium **carbonate** and ammonium **hydroxide**. Ammonium **carbamate** has the structure NH.sub.2 COO.sup.- NH.sub.4. Use of this particularly preferred buffer obtains outstanding reducti

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 classes:1 510/300 1 427/3934 1 510/321 1 510/325 1 510/393 1 510/400 1 510/475
 score: 522

keywords: amylase;protease;triethanolamine;alcohol ethoxylate;neodol;ethylene glycol;enzyme;propylene glycol;propylene;ethylene glycol;isopropanol;ethanol;alkanolamine;hydroxide;carbonate;anionic;nonionic;cleaning;claimed;glycol;alcohol;ethylene;ammonium;

- ble liquid detergent having soil release promoting properties, enzymatic effectiveness and detergency like that of the composition of Example 1, or better, results. The liquid detergent is clear blue and in the absence of dye may be of a light color, so that it can be desirably colored by use of other dyes, too. Instead of the brightener system mentioned, equivalent proportions of Tinopal RBS-200, Tinopal 4226 (CIBA-Geigy) or Phorwite RKH (Mobay Chemical Company) and mixtures thereof may be substituted. In all such cases the substantivity of the fluorescent brightener is improved due to the presence of the higher fatty alcohol ethoxylate sulfate and, unlike other ****anionic**** detergents, such as sodium linear dodecyl benzene sulfonate, the fatty ****alcohol ethoxylate**** sulfate does not destabilize the polymeric soil release promoting agent.

EXAMPLE 3

The formula of Example 1 is changed so that 5% of ****neodol**** 25-3S is present instead of the

- yed within the proportion ranges given. The detergents resulting are clear, stable and non-separating and possess good soil release promoting, ****cleaning**** and brightening properties, like those described in Examples 1-3. Such is also the case when the fluorescent dye, colorant and perfume are omitted from the formulas of this example. Similarly, when ****triethanolamine**** or ionizable salt is present in such formulas beyond the limits given, and when other ****anionic**** detergents, such as sodium higher alkyl benzene sulfonates, are substituted for the ****alcohol ethoxylate**** sulfate the product becomes less stable and less effective in promoting soil release during washing, and when the sodium formate is omitted the effects of the ****enzyme**** are lost after only a few days storage at the elevated test temperature.

In other variations in this example the ****nonionic**** detergent is ****neodol**** 23-6.5 or a mixture of equal parts of ****neodol**** 23-6.5 and ****neodol**** 25-7,